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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,857	02/11/2002	Dominique Loubinoux	4068-040	8967

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EXAMINER

AFTERGUT, JEFF H

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,857

Applicant(s)

LOUBINOUX, DOMINIQUE

Examiner

Jeff H. Aftergut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-36 is/are pending in the application.
- 4a) Of the above claim(s) 32-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 17-31, drawn to a process of making a composite sheet, classified in class 156, subclass 180.
 - II. Claims 32-35, drawn to an apparatus for making a composite sheet, classified in class 156, subclass 441.
 - III. Claim 36, drawn to a composite sheet, classified in class 428, subclass 105.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed could be used in a materially different process such as one where the filaments were coated with a thermosetting resin and the assembly was partially cured to secure the layers together with the heating mechanism. There is no requirement in the device that one utilize a thermoplastic filament and reinforcing filament in the same.
3. Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed could be used to make a materially different product such as one where the shrinkage of the finished assembly was greater than 6 percent.

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4. Inventions II and III are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the apparatus as claimed can be used to make another and materially different product such as one which was adhered with thermosetting partially cured resin or one which had a shrinkage greater than 6 percent.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper. It should be noted that due to the nature of the divergent subject matter there would have been an examination burden associated with the examination of different statutory classes of invention within the same application.

7. During a telephone conversation with Mr. Dietz on 5-28-02 a provisional election was made with traverse to prosecute the invention of Group I, claims 17-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 32-36 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 17-24 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diehl in view of Whisler et al optionally further taken with Vane.

Diehl suggested that it was known at the time the invention was made to join a plurality of laps of threads together wherein the same were formed at right angles to one another (for example in Figure 1 note that the wound thread lap was disposed at a right angle to the machine direction fed filaments in the operation). The reference contemplated that those skilled in the art would have utilized a thermosetting resin to hold the fibers of the sheet together as the assembly passed through heated rollers wherein after joining the assembly was rolled up for storage. The reference additionally suggested that one skilled in the art would have known to substitute thermoplastic sheets for the warp 60 of fibers to assist in the lamination of the assembly, see column 7, lines 56-column 8, line 9. the reference failed to make mention of the use of commingled filaments of thermoplastic and reinforcement in the operation.

The reference to Whisler, who suggested that those skilled in the art at the time the invention was made would have joined warps together in a similar manner to Diehl (where the filaments were wound about to form the laps therein), suggested that those skilled in the art at the time the invention was made would have known to utilize thermoplastic filaments and reinforcing filaments in the assembly in order to join the warps together and that such an

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arrangement of filaments was an alternative to the use of thermoplastic sheets used to join the materials together as described at column 7, line 39-column 8, line 3, column 8, line 52-column 9, line 10. clearly, those skilled in the art at the time the invention was made would have incorporated a thermoplastic filamentary material within the reinforcing material as an alternative bonding material in place of the use of webs of thermoplastic material in light of the suggestions of Whisler. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the joining techniques for the laps of Whisler in the operation of Diehl for making a composite sheet material.

With respect to claim 18, one skilled in the art at the time the invention was made would have known what percentage of thermoplastic to add to the assembly to hold the same together as well as for provision of a matrix and such would have been readily determined experimentally. It is taken as conventional in the art of thermoplastic fiber reinforced composites to employ at least 10 percent thermoplastic material therein. Regarding claim 19, note that the fibers of Diehl and Whisler are not connected to one another. Regarding claims 20-21, note that the use of co-blended threads (commingled) is taken as conventional in the art and was suggested by Whisler, see column 7, lines 39-53, for example. Regarding claims 22-24, the particular fabric forming techniques used to form the cross lapped and/or biased layers are taken as conventional in the art of weaving and or manipulation of strands to form non-woven materials. Namely, the use of a rapier loom, a weft insertion carriage and a netting loom were all well known techniques used in the art for forming nonwoven layers with the fibers oriented in a specified direction and the use of the same in the operation would have been within the purview of the ordinary artisan. With regard to claims 29 and 31, the specific types of material added for the reinforcing fibers as

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well as the thermoplastics would have been within the selection skill of the ordinary artisan dependent upon the desired final characteristics of the finished assembly. Regarding claim 30, the references to Whisler and Diehl suggested the multiplayer arrangements as defined. It certainly would have been within the purview of the ordinary artisan to arrange multiple layers with multiple different direction of the reinforcement dependent upon the desired finished characteristics one wished to attain.

While the references as set forth above in suggested the overall operation, to further evidence that those skilled in the art of composite manufacture would have known to incorporate thermoplastic fibers within the reinforcement to make the composite sheeting, the reference to Vane is cited. Vane suggested that those skilled in the art would have incorporated thermoplastic fibers in whatever amount desired for a matrix in the manufacture of a composite lay-up of layers wherein the orientation from one layer to the next was varied dependent upon the characteristics one wished to attain in the finished assembly. It would have been obvious to one of ordinary skill in the art of composite article manufacture to incorporate thermoplastic filaments within the reinforcing filaments of Diehl as suggested by Whisler and as further supported by Vane as such manufacture for forming composite sheeting was known by the ordinary artisan at the time the invention was made.

10. Claims 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 9 further taken with either one of O'Connor and PCT WO 97/26397.

The references as set forth above in paragraph 9 suggested that those skilled in the art would have incorporated continuous filaments in the manufacture of the composite sheeting, the

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ordinary artisan was well aware that chopped strand in the form of individual strands or in the form of a chopped strand mat would have been an alternative composite material useful in the manufacture of the fiber reinforced composite sheet. Such is evidenced by O'Connor as well as PCT '397 who both suggested that chopped commingled strands would have been used in the manufacture of composite sheeting. Such was envisioned by each as an alternative material to continuous strands of the reinforcing material and thermoplastic matrix fibers. Clearly, dependent upon the desired finished assembly and the required strength characteristics needed for the same, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the chopped filaments within the assemblies of the references as set forth above in paragraph 9 as suggested by O'Connor or PCT '397 wherein such materials were known alternatives to the use of continuous commingled fibers useful for making composite sheeting.

With respect to claim 26, the redirection of chopped fibers was suggested by PCT '397 and such is taken as conventional in nonwoven mat formation from chopped strands. Regarding claims 27 and 28, incorporation of the chopped strands between the continuous strands would have been obvious in light of the teachings of PCT '397 as well as Vane wherein one applied the layers in the order desired to achieve the desired characteristics in the finished assembly.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Woodside et al '643 is referred to in Whisler (see column 7, line 43). Woodside et al '284 suggested formation of a knit from commingled filaments. Stuart, Laws and McMahon et al

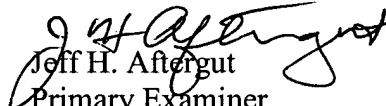
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all formed commingled strands for composite article manufacture. PCT 99/55519 suggested similar manufacture to Diehl.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 703-308-2069. The examiner can normally be reached on Monday-Friday 6:30-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W. Ball can be reached on 703-308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
June 12, 2003